

What is claimed is:

1. An optical system for forming a real image from source light from a source, comprising:
  - (a) at least one converging element for converging a portion of the source light so as to form the real image when the optical system is in use; and
  - (b) a broadband reflector-polarizer located in an optical path between said at least one converging element and the real image and opposite the source when the optical system is in use.
2. An optical system according to claim 1, further comprising a circular polarizer located in said optical path between the source and said broadband polarizer when the optical system is in use.
3. An optical system according to claim 2, wherein said circular polarizer comprises a linear polarizer and a quarter wave retarder.
4. An optical system according to claim 3, wherein said broadband reflector-polarizer has a first bandwidth response and said first quarter wave retarder has a second bandwidth response that is substantially matched to said first bandwidth of said broadband reflector-polarizer.
5. An optical system according to claim 3, wherein said quarter wave retarder comprises liquid crystal polymers.
6. An optical system according to claim 1, further comprising a beamsplitter located in said optical path between the source and the real image when the system is in use.
7. An optical system according to claim 1, further comprising a direct-view light extinguisher located in said optical path between said broadband reflector-polarizer and the real image when the optical system is in use.
8. An optical system according to claim 1, wherein said converging element comprises a beamsplitter.

9. An optical system according to claim 1, wherein said converging element comprises said broadband reflector-polarizer.
10. An optical system according to claim 1, wherein said converging element is a lens.
11. An optical system according to claim 1, wherein said converging element comprises said broadband reflector-polarizer in a cylindrical configuration.
12. An optical system according to claim 1, wherein said converging element is a concave reflector
13. An optical system according to claim 1, wherein said broadband reflector-polarizer comprises a cholesteric liquid crystal structure.
14. An optical system according to claim 1, wherein said broadband reflector-polarizer has a transmissive/reflectance efficiency of at least 60%.
15. An optical system according to claim 14, wherein said transmissive/reflectance efficiency is at least 90%.
16. An optical system according to claim 1, further comprising a wide view film located in said optical path between said broadband reflector-polarizer and the real image when the optical system is in use.
17. An optical system for forming a real image from source light from a source, comprising:
  - (a) a direct-view light extinguisher comprising a quarter wave retarder having a first bandwidth response;
  - (b) a reflector-polarizer located in an optical path between said direct-view extinguisher and the source when the optical system is in use, said reflector-polarizer having a second bandwidth response that is substantially matched to said first bandwidth response of said quarter wave retarder; and
  - (c) at least one converging element configured to converge a portion of the source light so as to form the real image when the optical system is in use.

18. An optical system according to claim 17, wherein said quarter wave retarder comprises liquid crystal polymers.
19. An optical system according to claim 17, wherein said reflector-polarizer comprises a dual brightness enhancement film.
20. An optical system according to claim 17, wherein said reflector-polarizer comprises a broadband reflector-polarizer.
21. An optical system according to claim 17, further comprising a wide view film located between said reflector-polarizer and the real image when the optical system is in use.
22. An optical system for forming a real image from source light from a source, comprising:
  - (a) a reflector-polarizer located between the source and the real image when the optical system is in use;
  - (b) at least one converging element for converging a portion of the source light so as to form the real image when the optical system is in use; and
  - (c) a wide-view film located between said reflector-polarizer and the real image when the optical system is in use.
23. An optical system according to claim 22, wherein said reflector-polarizer comprises a dual brightness enhancement film.
24. An optical system according to claim 22, wherein said reflector-polarizer comprises a broadband polarizer.
25. An optical system according to claim 22, wherein said wide-view film is a compensation film.
26. A system for projecting a real image, comprising:
  - (a) at least one source emitting source light; and
  - (b) an optical system forming a real image from said source light, said optical system comprising:
    - (i) at least one converging element for converging a portion of said source light so as to form a real image; and

(ii) a broadband reflector-polarizer located in an optical path between said at least one converging element and said real image and opposite said source.

27. An optical system according to claim 26, further comprising a direct-view extinguisher located in said optical path between said broadband reflector-polarizer and said real image for extinguishing a second portion of said source light.
28. An optical system according to claim 27, further comprising a circular polarizer located in said optical path between said source and said broadband reflector-polarizer.